

IUBMB Enzyme Nomenclature

EC 1.3.3.4

Common name: protoporphyrinogen oxidase

Reaction: protoporphyrinogen-IX + 1.5 O₂ = protoporphyrin-IX + 3 H₂O

For diagram [click here](#).

Other name(s): protoporphyrinogen IX oxidase; protoporphyrinogenase

Systematic name: protoporphyrinogen-IX:oxygen oxidoreductase

Comments: Also slowly oxidizes mesoporphyrinogen-IX.

Links to other databases: [BRENDA](#), [EXPASY](#), [KEGG](#), [WIT](#), CAS registry number: 53986-32-6

References:

1. Poulson, R. The enzymic conversion of protoporphyrinogen IX to protoporphyrin IX in mammalian mitochondria. *J. Biol. Chem.* 251 (1976) 3730-3733. [PMID: [6461](#)]
2. Poulson, R. and Polglase, W.J. The enzymic conversion of protoporphyrinogen IX to protoporphyrin IX. Protoporphyrinogen oxidase activity in mitochondrial extracts of *Saccharomyces cerevisiae*. *J. Biol. Chem.* 250 (1975) 1269-1274. [PMID: [234450](#)]
3. Dailey, H.A. and Dailey, T.A. Protoporphyrinogen oxidase of *Myxococcus xanthus*. Expression, purification, and characterization of the cloned enzyme. *J. Biol. Chem.* 271 (1996) 8714-8718. [PMID: [8621504](#)]
4. Wang, K.F., Dailey, T.A. and Dailey, H.A. Expression and characterization of the terminal heme synthetic enzymes from the hyperthermophile *Aquifex aeolicus*. *FEMS Microbiol. Lett.* 202 (2001) 115-119. [PMID: [11506917](#)]
5. Corrigan, A.V., Siziba, K.B., Maneli, M.H., Shephard, E.G., Ziman, M., Dailey, T.A., Dailey, H.A., Kirsch, R.E. and Meissner, P.N. Purification of and kinetic studies on a cloned protoporphyrinogen oxidase from the aerobic bacterium *Bacillus subtilis*. *Arch. Biochem. Biophys.* 358 (1998) 251-256. [PMID: [9784236](#)]

[EC 1.3.3.4 created 1978, modified 2003]

[Return to EC 1.3.3 home page](#)

[Return to EC 1.3 home page](#)

[Return to EC 1 home page](#)

[Return to Enzymes home page](#)

[Return to IUBMB Biochemical Nomenclature home page](#)

SEARCH NOTE

09/508,418 SEARCH STRATEGY

(FILE 'HOME' ENTERED AT 10:17:57 ON 08 DEC 2003)

FILE 'MEDLINE, AGRICOLA, CAPLUS, BIOSIS, EMBASE, WPIDS' ENTERED AT
10:18:55 ON 08 DEC 2003

L1 8 S TABACUM (10A) ((PROTOPORPHYRINOGEN (W) OXIDASE) OR PROTOPORPH
L2 4 DUP REM L1 (4 DUPLICATES REMOVED)

FILE 'CAPLUS' ENTERED AT 10:20:13 ON 08 DEC 2003

E HORIKOSHI M/AU 25
L3 5 S (E3 OR E6) AND (PROTOX OR (PROTOPORPHYRINOGEN (W) OXIDASE) O
L4 5 S (E3 OR E6) AND (PROTOX OR (PROTOPORPHYRINOGEN (W) OXIDASE) O
E MAMETSUKA K/AU 25
L5 2 S (E3 OR E4) AND (PROTOX OR (PROTOPORPHYRINOGEN (W) OXIDASE) OR
E HIROOKA T/AU 25
L6 5 S (E3 OR E11) AND (PROTOX OR (PROTOPORPHYRINOGEN (W) OXIDASE) O

SEAP01 NOTE

| | Type | L # | Hits | Search Text | DBs | Time Stamp |
|---|------|-----|------|--|--|---------------------|
| 1 | BRS | L1 | 47 | tabacum and (protoporphyrinogen or protoporphyrinogenase) | USPAT; US-PGP UB; EPO; JPO; DERWE | 2003/12/08 09:56 |
| 2 | BRS | L2 | 35 | tabacum and ((protoporphyrinogen adj oxidase) or protoporphyrinogenase) | USPAT; US-PGP UB; EPO; JPO; DERWE | 2003/12/08 09:57 |
| 3 | BRS | L3 | 10 | tabacum near10 ((protoporphyrinogen adj oxidase) or protoporphyrinogenase) | USPAT; US-PGP UB; EPO; JPO; DERWE | 2003/12/08 10:25 |
| 4 | BRS | L4 | 6171 | horikoshi.in. or mametsuka.in. or hirooka.in. | USPAT; US-PGP UB; EPO; JPO; DERWE | 2003/12/08 10:26 |
| 5 | BRS | L5 | 0 | I4 and I1 | USPAT; US-PGP UB; EPO; JPO; DERWE | 2003/12/08 10:26 |
| 6 | BRS | L6 | 0 | I4 and protox | USPAT; US-PGP UB; EPO; JPO; DERWE | 2003/12/08 10:26 |